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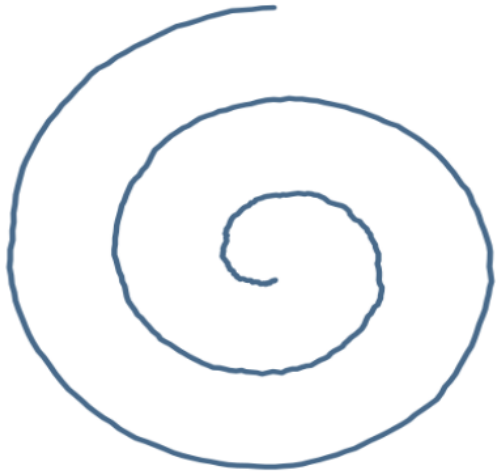

THE THRESHOLD OF CARE

Fate, Blame, Place, Class: Who Decides What Makes Us Ill

Giovanni Martini

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Epilogue: Beyond the Threshold

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Prologue: The Decalogue Reversed

In 1999 the Chief Medical Officer for England, the senior doctor in government, set out ten tips for better health in a white paper:

1. Don't smoke. If you can, stop. If you can't, cut down.
2. Follow a balanced diet with plenty of fruit and vegetables.
3. Keep physically active.
4. Manage stress by, for example, talking things through and making time to relax.
5. If you drink alcohol, do so in moderation.
6. Cover up in the sun, and protect children from sunburn.
7. Practise safer sex.
8. Take up cancer screening opportunities.
9. Be safe on the roads: follow the Highway Code.
10. Learn the First Aid ABC: airways, breathing, circulation.

Ten imperatives addressed to a single body, in the patient tone of someone who knows the reader will not follow them all the way and thinks it worth trying anyway.

Soon afterwards the Townsend Centre for International Poverty Research at the University of Bristol replied with a decalogue of its own, identical in form and inverted in content:

1. Don't be poor. If you are poor, try not to be poor for too long.
2. Don't live in a deprived area. If you do, move.
3. Don't be disabled or have a disabled child.
4. Don't work in a stressful low-paid manual job.
5. Don't live in damp, low quality housing or be homeless.
6. Be able to afford to pay for social activities and annual holidays.
7. Don't be a lone parent.
8. Claim all benefits to which you are entitled.
9. Be able to afford to own a car.
10. Use education as an opportunity to improve your socio-economic position.

The same syntax, the same number of commandments, the same tone of medical advice. And a complete reversal of who has to do what in order to reach the same result: staying healthy.

Set side by side, the two lists do not contradict each other. They put the cause of illness in two different places: in the body that chooses, or in the circumstances that body did not choose. The first assumes an

individual free to decide, who need only want it enough. The second assumes an individual held in place by things no list of good intentions can shift on its own — income, housing, neighbourhood, the terms of a contract.

What is interesting is not that one of them is right and the other wrong. It is that every society, in every period, has to choose which of the two to use as its main lens, and that the choice is never neutral and never merely scientific. To treat a cause of illness as personal blame or as structural fate is to decide where the cost of doing something about it will fall, and it falls, almost always, on the people with least standing to object.

This book comes out of the gap between the two lists. Not to settle which of them is right, but to follow, chapter by chapter, who decides each time which one to apply, to whom, and why at that moment rather than another.

Part One: The Body We Did Not Choose

Every age imagines a kind of person especially exposed to a particular disease. A way of being, almost a portrait, which seems to explain why that person fell ill before anything is known about the cause. This is not science. It is a way of giving fate a face you can recognise.

In this part the book follows that figure first through its cultural history, then in its most literal form, the one that concerns the biological body: genetic inheritance, constitution, what a person is given at birth and by definition has not chosen.

The genealogy of the diseased character

Susan Sontag reconstructed this habit of assigning a character to a disease with the tools of literary criticism rather than epidemiology. She identified three historical phases, each with a logic of its own.

In the ancient world, in Homer, disease could be unmotivated or deserved. A personal transgression, a collective one, even the guilt of an ancestor: the natural and the supernatural coexisted without hierarchy. With Christianity the idea hardens. Disease becomes a punishment proportionate to the sin, a legible sign of the moral failing of whoever carries it.

The decisive shift comes in the nineteenth century, and it opens the way to everything modern thought has said about illness since. Disease stops being a punishment inflicted from outside for a fault and becomes the expression of a character, the mark of a personality. It now reveals the person who carries it instead of punishing them: the consumptive of the Romantic nineteenth century is not paying for a sin but displaying a sensitive and passionate soul. Arthur Schopenhauer could write in those years that it is the will itself that falls ill, and that recovery asks the healthy will to take dictatorial power over the rebellious forces of the body.

From there the step into the twentieth century is short, and Sontag marks it exactly: if disease expresses character, sooner or later someone will claim that character produces it. This is the birth of psychosomatic thinking applied to the great diseases of the century. The whole structure is worth pinning down here. The rest of this part, which deals with the biological body in the strict sense, applies the same logic at a finer grain: the gene instead of the temperament.

Dubos and the mirage of health

In 1959 the microbiologist René Dubos published a book whose title is already an argument: *Mirage of Health*. His thesis was simple and, at the time, close to heresy. The idea of a golden age of health, a state of complete wellbeing that can be reached and then kept, is a mirage in the most technical sense: an aim wrongly set from the start, not an illusion to be corrected with more science. Life itself is continuous adaptation to an environment that never stops changing.

The book opens with that myth, recurrent in every culture, of a lost golden age when health was whole and disease absent. It is a consoling image. It ignores how far the very notion of perfect health is incompatible with being alive, exposed, and in relation with an unstable world.

Mirage of Health closes on a paragraph worth giving in full, because it states in the affirmative what the rest of the book states by negation.

> While it may be comforting to imagine a life free of stresses and strains in a carefree world, this will remain an idle dream. Man cannot hope to find another Paradise on earth, because paradise is a static concept while human life is a dynamic process. Man could escape danger only by renouncing adventure, by abandoning that which has given to the human condition its unique character and genius among the rest of living things. Since the days of the cave man, the earth has never been a Garden of Eden, but a Valley of Decision where resilience is essential to survival. The earth is not a resting place. Man has elected to fight, not necessarily for himself, but for a process of emotional, intellectual, and ethical growth that goes on forever. To grow in the midst of dangers is the fate of the human race, because it is the law of the spirit.

The target is worth naming, because it is still in force. Eleven years before *Mirage of Health*, in 1948, the World Health Organization defined health as a state of complete physical, mental and social wellbeing, and not merely the absence of disease or infirmity. The definition is generous in intent and unworkable in practice: it sets the threshold of health at a point nobody ever reaches, and so leaves everyone ill for almost all of their lives. The surgeon Imre Loefler disposed of it with the joke that has outlived him: complete physical, mental and social wellbeing is achieved only at the moment of simultaneous orgasm.

Dubos aimed his criticism above all at what he called the doctrine of specific aetiology: the idea, inherited from Pasteur and Koch, that every disease has a single identifiable cause, a microorganism, a gene, a factor. He acknowledged that this paradigm had produced the most solid part of modern medicine, an arsenal of treatments that now targets with precision a range of conditions unthinkable a century earlier.

But for the great pathologies of his own time — cancer, arteriosclerosis, mental disorders — the search for a single cause was probably misconceived. Most diseases, he wrote, are not the direct effect of one determining factor: they are the outcome of a constellation of circumstances that combine differently in each individual. He gave the example of insulin. Its discovery made diabetes treatable, but it did not settle the aetiology: diabetes remains a general metabolic disorder in which the lack of insulin is often a consequence rather than the first cause.

Nine years later, in *So Human an Animal*, Dubos took up the same argument from another direction. No longer what the body inherits, but how the environment it grows in shapes it in depth, in ways the language of classical genetics could not yet describe.

The criticism is worth keeping in view for the whole of this part. The register of biological fate rests precisely on the promise Dubos was questioning: that somewhere in the body there is a single legible cause, and that finding it amounts to explaining all the rest.

A recent scientific controversy shows how open the question remains, and how far its implications are from academic. Between 2015 and 2017 two researchers at the Kimmel cancer centre in Baltimore published a series of papers in *Science* arguing that more than half of cancers arise by pure chance, as a statistical consequence of the number of stem cell divisions in a tissue, independently of environmental exposure or ways of living. The international press picked this up and spoke plainly of bad luck.

The epidemiologist Paolo Vineis, who returns later in connection with the exposome, led part of the scientific criticism. The mathematics the argument rested on contained errors. It did not explain the rapid rise of cancers in developing countries, where stem cell proliferation cannot change within a single generation. And it ignored something decisive: a tumour requires several mutations, and removing one of them is often enough to prevent it, even where the others really were random.

The point that matters here, though, is not technical. It is the message the bad-luck theory carries by implication: that we might spare ourselves the effort of prevention, since cancer will strike anyway on the whim of chance. That is exactly the shortcut to fate this part has been questioning from the start. A scientifically weak thesis can be culturally attractive, because it absolves everyone in advance — health systems, environmental policy, individuals alike — of any duty to change anything.

From eugenics to the polygenic risk score

At the beginning of the twentieth century the promise of a wholly legible body took the form of eugenics. Eugenicists held that human traits, including the propensity to disease, passed from one generation to the next by simple and predictable laws; an enlightened society could therefore improve its own biological composition by selecting who should reproduce and who should not.

It was a scientific error before it was a moral one, although the two reinforced each other historically, at a price the twentieth century paid in full. Almost no human trait of any consequence behaves like a single Mendelian character passed intact from one generation to the next. Health as a whole, least of all.

In his cultural history of genetics, *The Gene*, the physician and writer Siddhartha Mukherjee traced how this ambition of complete legibility resurfaced repeatedly across the century. Each time with a more sophisticated technical vocabulary, each time with the same underlying structure.

In the United States eugenics did not stay in the seminar room. It became state law authorising the forced sterilisation of tens of thousands of people judged unfit to reproduce, a body of legislation some European jurists would study closely in the 1930s in order to build something more radical still. It is the part of the history of genetics that biology textbooks recall least willingly. Mukherjee thought it had to be told in full, precisely because it shows where excessive confidence in a legible and collectively correctable body leads.

The latest incarnation of that ambition is the polygenic risk score, which aggregates thousands of small genetic variants scattered along the genome to estimate the probability that a person will develop a given condition, from diabetes to depression. The instrument is real, statistically sound, and useful in some fields of research. But the way

it reaches the public, often as a single number that appears to reveal a destiny hidden in one's genome, revives almost intact the promise eugenics made a century earlier: that the body contains a legible text, and that reading it is enough to know in advance what one will become. The technical distance is enormous. The structure of the promise, much less so.

CRISPR and technical redemption: original sin rewritten

If the genome is a text, the gene-editing technology CRISPR offers for the first time a concrete possibility of correcting it directly rather than only reading it. The turn has a precise theological structure, even where nobody names it as such. Genetic risk is inherited without guilt, like original sin: something already written in us before we have acted at all. And the technology now promises a redemption that is technical instead of spiritual, the direct rewriting of the text that condemns us.

It is no surprise that the first approved clinical applications concern severe single-gene conditions, such as some forms of sickle cell disease. These are the cases where the metaphor of a text to be corrected works most literally: one error at one point in the genome.

In 2018 a Chinese researcher announced the birth of twin girls whose embryos had been edited to make them resistant to HIV, and the international scientific community condemned the work almost unanimously. The case shows two things. That the distance between what the technique permits and what the ethics of research will accept remains wide. And that the temptation to apply technical redemption beyond the agreed limits is already concrete rather than theoretical.

It is a powerful promise precisely because it repeats a very old narrative form, that of inherited guilt and its expiation. But it concerns, for now, a small number of well-defined conditions. Not the undifferentiated mass of multifactorial diseases Dubos was already describing sixty years before the technique existed. The gap between the promise, which fills most of the public narrative around CRISPR, and its actual field of application, still narrow, is itself a cultural fact as interesting as the technical one. It shows how strong the wish is to find, at last, a technical remedy for a fate that until yesterday looked irrevocable.

Epigenetics dissolves the boundary: Geronimus and weathering

The last step in this part turns the perspective round. Epigenetics has

shown that the genome is not a fixed text that simply expresses itself according to a predetermined programme. It is a text the environment keeps modifying, switching individual genes on or off in response to living conditions, chronic stress, diet and toxic exposure, without altering the DNA sequence itself. The boundary between the genetic and the environmental underpins the entire taxonomy of the five registers in this book. It starts cracking here, and goes on cracking chapter by chapter.

The American epidemiologist Arline Geronimus gave the phenomenon a precise name: *weathering*, the wear that weather works on an exposed surface. It is measurable biological wear, accelerated cellular ageing included, produced by the chronic stress of living with social disadvantage and systemic discrimination.

It is not a metaphor. It is a biological signature, detectable in markers such as telomere shortening and raised cortisol. Social disadvantage leaves it in the body regardless of individual behaviour, regardless of how faithfully that person has followed every recommendation in the first decalogue in the Prologue.

At this point in the story, biological fate is no longer separable from the class one is born into and grows old in. It is the first of the many boundaries this book will watch dissolve, and it prepares the ground directly for Part Four, where the book observes the same mechanism not in a single body but in the architecture of a whole society.

Part Two: The Blame for Being Ill

In Part One illness looked as though it were written into the body before any choice was made. This part changes register: illness is put down to how a person lives rather than how they were born, and therefore to something presumed avoidable with a little more will. It is the most insidious of the five registers, because it presents itself as empowerment, an invitation to look after yourself, while shifting onto the individual a weight that originates elsewhere. It is also the register in which medicine, by looking for disease before it declares itself, runs a systematic risk of producing more of it.

The government's decalogue against the Bristol decalogue

The Prologue has already set out the gap between the two lists. It is worth adding that the impulse to turn healthy people into patients is not an invention of contemporary public health.

In 1923 the French playwright Jules Romains staged *Knock, or the Triumph of Medicine*. A country doctor takes over a practice with no patients, because nobody in the village ever falls ill. Within months the village has become a community of the sick, simply because the new doctor refuses to believe that a category of healthy people exists. In a line that has outlasted the play, Knock reveals that he wrote his medical thesis under an epigraph attributed to Claude Bernard, the great physiologist of the nineteenth century: healthy people are the ill who do not yet know it.

The interesting detail, which the text lets slip almost unnoticed, is that Knock admits he made the quotation up. A century before the writing of this book ran into a comparable problem — more on that later — a playwright had already worked out the rule: the most effective way to get a questionable idea accepted is to attach it to an authoritative name, whether or not the name ever said it.

Lifestyle drift: how structural policy slides onto the individual

There is a phenomenon documented in the health policy literature under the name of *lifestyle drift*. Strategy documents almost always open by invoking the structural determinants: income, education, environment. They almost always close by funding campaigns about individual behaviour.

The reason is economic and political at once. Acting on income requires redistribution; acting on the environment requires regulation against established interests. Recommending that people smoke less or walk more costs almost nothing and disturbs no arrangement of power. It is nobody's cynical decision: it is the predictable outcome of a thousand local choices, each rational from where it is made, converging on the same transfer of weight from the system to the individual.

Smoking is the textbook case. The studies collected by Marmot and Wilkinson in their academic volume on the social determinants of health show that tobacco use follows a sharp social gradient. It is the individual behaviour par excellence, the one that absorbs almost all health communication; and yet people smoke more, and find it harder to stop, the further down the social scale they are.

Asking why the poorest smoke most is not an idle question. The literature answers that smoking is one of the few sources of immediate relief available cheaply under stressful living conditions, and that people lower down are less often in social settings where quitting is treated as the normal thing to do. These answers move the question from a single vice to be corrected towards the material conditions that make the vice, in a given context, close to rational.

At this point it is worth giving the opposing position its most serious version, rather than the caricature of the health enthusiast handing out blame. There is a substantial philosophical tradition, responsibility-sensitive egalitarianism, which defends individual responsibility for health as a legitimate and even respectful principle.

Alexander Cappelen and Ole Frithjof Norheim put it like this. Recognising the social determinants does not abolish individual responsibility. It bounds it. If society is answerable for what lies outside a person's control, the person remains answerable for what lies within it. To treat anyone as the pure product of their circumstances is itself a failure of respect, because it denies them the standing of someone capable of choosing — exactly the standing this book has tried to return by preferring the word citizen to the word patient.

What is striking is that even the most rigorous defenders of this tradition arrive at qualified conclusions. The economist Julian Le Grand, in the same volume where Marmot and Deaton set out their positions, starts from an individualistic notion of responsibility and, by following it all the way, ends up justifying a largely collective health system. Too many factors escape the individual; illness also

depends on luck; and the smoker who wants to stop and cannot is making a forecasting error about themselves rather than a free choice. Le Grand does not deny that behaviour matters. What he proposes is that the risk be paid for in advance, through a tax on the dangerous activity, rather than by withholding treatment from whoever falls ill later. It is the most honest counterweight to the register of blame: it forces that register to declare how far it is prepared to go, instead of refuting it.

Domenighetti and the demand that information creates

The health economist Gianfranco Domenighetti devoted part of his research to a paradox easy to state and hard to correct. The more early diagnosis is offered, the more overdiagnosis is produced: lesions are found that would never have caused a symptom in a whole lifetime.

For prostate cancer, the scientist who discovered prostate-specific antigen has written in the press that the discovery was never meant to license a use this wide and this questionable, and has compared the reliability of the test to the toss of a coin. For breast cancer, systematic reviews estimate that for every death avoided by mammographic screening several women are treated needlessly, with surgery, radiotherapy or chemotherapy that would never have concerned them had the lesion not been actively sought.

Domenighetti also noticed a detail that deserves more attention than it gets. In one of his studies, general practitioners were no better than the public at telling screening programmes of proven benefit from those of marginal benefit. It is an uncertainty no information leaflet, however well written, can close on its own.

The same fragility shows up on the diagnostic side. In a small study using a bogus patient, ten dermatologists were shown the same verruca on the same foot: eight different diagnoses came back. This is not an anecdote at the expense of dermatologists. It is the variability of clinical practice made visible in a case where the finding was, literally, identical.

Domenighetti also described the logical trap that makes a test look all but unrefusable to the person taking it. If I take it and it comes back positive, I was right to take it, because treatment can start earlier. If it comes back negative, I was right anyway, because now I can stop worrying. If I do not take it and later fall ill, I was wrong not to. On every outcome, taking the test looks like the better choice, and the

conclusion that it is always better to be tested becomes unassailable without ever having been demonstrated. It is a cage that only opens from outside, with explicit information about benefits, harms and uncertainties: precisely what almost no leaflet provides. And this is not an impression: Angela Coulter, reviewing the patient information materials in use in the British health service, found that most emphasise benefits, gloss over risks and side effects, and hardly ever mention scientific controversies, treating the reader as an ignorant child to be instructed and reassured rather than as the person who best knows their own needs.

A counterexample does exist, though, and it is Domenighetti's own. From the 1990s the health service of the Canton of Ticino sent every household in the canton, three times over, a leaflet explaining why it is worth asking for a second opinion, with a list of the operations for which it is worth doing so: gallbladder removal, hysterectomy without a tumour indication, tonsillectomy, prostatectomy, cataract, spinal disc surgery. And one piece of advice that shows how well the problem was understood: do not tell the second doctor that a first opinion already exists, so as not to anchor them. For that elective surgery, rates of non-confirmation run above thirty per cent.

The detail that matters most, in a book asking who decides, is that those leaflets went out from the public health authority in collaboration with the medical association. A health service informing citizens against its own supply, and a profession willing to put its name to the invitation. It is information used to reduce intervention rather than to induce it, and it shows that the lever of this part of the book turns both ways, depending on who takes hold of it.

The Italian cardiologist Marco Bobbio told the same story from inside a consulting room rather than from the figures of an epidemiological study. A retired patient of his, after a brief episode of dizziness, is sent by his family doctor for a series of cardiac investigations. The dizziness, meanwhile, has passed by itself. The tests reveal mild mitral valve insufficiency: a common finding in people of his age, unrelated to the symptoms, which have already resolved on their own.

From that moment the man lives in anxiety about monitoring, for the rest of his life, a finding that would never have troubled him had nobody gone looking for it. This is overdiagnosis seen as a biography rather than a statistic: an anxiety installed in an otherwise quiet life, produced not by medical negligence but by the scrupulous application of a protocol.

Richard Smith, editor of the *British Medical Journal* from 1991 to 2004, pushed the same reasoning a step further, in a direction this book has not yet taken. He did not ask when a diagnosis is one too many, but what exactly is being protected when the diagnosis is sought. Medicine, he observes, has no theory of health: it has a catalogue of diseases, and calls health whatever is left when the catalogue finds nothing. It is a definition by subtraction, and it collapses under enough testing. Examine anyone thoroughly enough and something will turn up.

Smith takes up an argument published in the *American Journal of Medicine* by Mary Tinetti and Terri Fried, of the Yale School of Medicine: the time has come to move disease out of the centre of medical care, because a medicine organised around separate diagnoses, applied to older people carrying four of them at once, produces as much undertreatment as overtreatment. He illustrates it with a patient he calls Lucy. She has heart failure, diabetes, asthma and osteoarthritis; she has a cardiologist, a diabetologist, a chest physician and a rheumatologist, plus a general practitioner holding the prescriptions together. But Lucy is not much interested in her four diseases, and death does not frighten her: what she would like is to see her son in Australia one more time. She needs a travel agent, Smith writes, not five doctors; only the health service supplies doctors and not travel agents.

The conclusion comes at the end, and it is the most uncomfortable part. Smith rejects both health as the absence of disease and the World Health Organization definition met in Part One, and puts no third definition in their place: he argues that the definition can only be personal, that each of us should decide what being well means, as each of us decides what a good life is. His favourite, that day, was Freud's: the capacity to love and to work. With the objection he immediately makes to himself, that anyone who hates their job will never recognise themselves in a health that runs through work. Elsewhere Smith reaches for another, and it is the one this book has most use for, because it is Illich's: health as the capacity to cope with the human reality of death, pain and sickness. Not a state to be reached and held but a competence — and precisely the competence that cultural iatrogenesis, a few pages from here, will describe medicine as expropriating.

It is a position that turns this book's question round without contradicting it. So far the question has been who decides what makes us ill; Smith asks who decides what counts as health. They are two sides of the same threshold, because settling where being well ends

and illness begins is already settling what is worth acting on. With one difference: the first question has institutional answers, while the second, if Smith is taken seriously, should have none.

Domenighetti closes one of his essays on this subject with an image from *Orlando Furioso*. A knight invites his guests to drink from a cup, knowing that whoever spills the wine down his chest is revealing that his wife has been unfaithful. Rinaldo, cup already in hand, decides not to drink. Not out of ignorance: because he has understood that some knowledge costs more than it returns. He would be a fool indeed, in Ariosto's line, who went looking for what he would rather not find. The image is worth a page of epidemiology. Sometimes not seeking the diagnosis is the rational choice and not the negligent one.

Skrabanek, McCormick and the follies of preventive medicine

The physician Petr Skrabanek, who taught community health in Dublin, devoted a whole book to the fallacies that sustain enthusiasm for mass prevention, written with his colleague James McCormick as early as 1989. The fallacy that prevention is always better than cure. The fallacy of authority, which consists in believing a statement true because of the position of whoever makes it. And the fallacy of risk, which mistakes a factor statistically associated with a disease for its direct cause.

Applied to breast cancer screening, their calculation on British data from the 1980s already showed two things. That in some controlled trials more than half the cancers detected by screening were overdiagnoses. And that the number of women who had to be examined to avoid a single death ran into the thousands: a statistical precision that the rhetoric of prevention, then as now, prefers to keep off the cover.

Skrabanek went on, alone, to take a term coined in 1980 by Robert Crawford, *healthism*, and sharpen it: *coercive healthism*, the ideology of the health of the nation as a new form of control over private life. The slogan "health for all", in his words, risks working as one more signpost on the roads that lead to the loss of liberty.

He described the militant health enthusiast, with some irony, as a species of secular crusader. And he observed that a society obsessed with physical and functional wellbeing risks sacrificing civil liberty by the same logic that keeps battery hens from ever falling ill: healthy, productive, and stripped of any margin of self-determination.

What Skrabanek called healthism has a far deeper genealogy than libertarian polemic, though, and it was Michel Foucault who traced it. In a series of lectures given in 1974 he showed that health becomes an object of power from the late eighteenth century, when the body, as labour force and as population to be governed, moves to the centre of politics. He called this biopolitics. Medicine appears within it as a strategy for governing bodies, not as simple therapeutic knowledge.

The healthism Skrabanek attacked is the present-day form of a morality of the body already built in the nineteenth century, when a vast hygienist literature turned good health into a moral duty towards oneself and towards others. From fact to obligation. For Foucault such phenomena are not explained by the choices of individuals understood as atoms of freedom and responsibility, but by working back to their systemic reasons. It is, half a century earlier and in another vocabulary, the rule this book has tried to follow since the Prologue.

He did not draw from it any praise of the caring state. In an interview in 1983 he warned of the opposite risk: an apparatus that requires everyone, by public decision, to be well, and reduces their autonomy over their own way of living.

A tension runs through this part of the book, and it is better noticed than flattened. Skrabanek writes from a libertarian position, defending individual freedom against the intrusiveness of preventive medicine; elsewhere in this book the same medicalisation is attacked from the opposite direction, by those who see the market and neoliberalism as the cause of an excess of medical supply. The two criticisms converge on one phenomenon for almost contrary reasons.

The physician Salvo Di Grazia offers a necessary counterpoint, because not all distrust of medicine runs the same way. His daily campaign against pseudomedicine, from homeopathy to therapies with no experimental basis of any kind, is a reminder that the same weapon, information, has to be used in the direction opposite to Skrabanek's as well: to defend scientific medicine rather than to cut it down to size.

The pharmacologist Silvio Garattini, also a critic of a medicine that overreaches but on very different ground, has proposed a way of holding both requirements together. He organises it into a map almost superimposable on this book's. On one side the dependencies to be corrected: tobacco, alcohol, drugs, gambling. On the other the good habits to be encouraged: physical activity, sleep, diet. And finally, explicitly separated from the first two groups, the socioeconomic determinants, education and poverty, which no campaign about

individual habits can correct on its own.

Genuine prevention, on this account, holds the three planes together without letting one slide into another: precisely the opposite movement to the lifestyle drift described at the opening of this part. It neither multiplies tests nor blames the individual. Skrabanek and Garattini are voices that do not reconcile easily, and this is one of the tensions the book prefers to leave open rather than dissolve into a comfortable synthesis.

The epidemic of diagnosis: from a pill for every ill to an ill for every pill

The formula that gives this section its title is British humour at its most economical, and it overturns the whole economy of contemporary medicalisation in a handful of words: medicine has moved from looking for a pill for every ill to constructing an ill for every available pill. The ambition had been stated without embarrassment as early as 1976 by Henry Gadsden, then chief executive of Merck, in an interview with *Fortune*: the trouble was that the potential of drugs had been limited to sick people; the dream was to make drugs for healthy people and sell to everyone, the way Wrigley's sells chewing gum. The boundary between disease and non-disease, once relatively stable, has become steadily more negotiable. Birth, ageing, sexuality, unhappiness, death — ordinary events of a life — are progressively reread as treatable medical conditions.

That the boundary is negotiable is not an impression: it has been measured. In 1979 the *British Medical Journal* published the results of a survey in which thirty-eight conditions were put to general practitioners, medical academics, academics from other disciplines and secondary school students, with a single question: is this a disease? On malaria and tuberculosis agreement was near unanimous. Below twenty per cent came hangover, tennis elbow, colour blindness, drowning and starvation. On hypertension, acne and gall stones the respondents split exactly down the middle. But the figure that matters most is another: the doctors were consistently more willing than anyone else to classify what they were shown as a disease.

The epidemiologist Geoffrey Rose gave this grey zone its sharpest formulation. There is no disease you either have or do not have, he said, except perhaps sudden death and rabies: of all the others you have a little, or you have a lot. If that is so, the line between the healthy and the ill is not found in the body. It is drawn, and somebody draws it.

English makes a distinction here that Italian cannot. *Disease* is the entity the medical catalogue names, with its criteria and its code. *Illness* is what the person undergoes, the lived experience of being unwell. *Sickness* is the social role: what a society grants to, and requires of, someone it recognises as ill. Italian has one word, *malattia*, for all three, and the original of this book had to make its argument through that single word. The three English words settle nothing, but they show where the joints are. Overdiagnosis is disease without illness: a finding on a screen that nobody feels. And the question this book keeps asking, who decides, turns out to be largely a question about sickness — about who is granted the role, and who is left holding an experience that no one will name.

Ivan Illich, discussed at greater length later in connection with transport, distinguished three levels of the phenomenon in medicine as early as the 1970s. The first, which he called clinical iatrogenesis, is the direct damage produced by treatment itself: infections acquired in hospital, side effects of drugs, complications of invasive tests. National health statistics, wherever they are collected honestly, keep showing this in proportions that are anything but negligible. The second level is social iatrogenesis, the growing dependence of a population on the consumption of medical services even where there is no real clinical need. The third is the deepest. It is cultural iatrogenesis: the loss of the capacity to make sense of pain, illness and death without a technician's mediation.

It is at this third level that the transformation of death itself belongs. Once the last and unavoidable event, death has become, in the rhetoric of a certain contemporary medicine, somewhat optional, postponable with enough tests, enough drugs, enough vigilance. Ian Morrison, a Scottish futurologist long resident in California, put it as a joke about geography: in Glasgow death is regarded as imminent, in Canada as inevitable, in California as optional.

Susan Sontag had already identified the same dynamic, with other tools, in the case of cancer. The cancer-prone character theorised by some twentieth-century psychoanalysts — cold, inhibited, unable to express emotion — is the latest version of an idea as old as medicine itself: that disease reveals, or even causes, a defect in the character of whoever contracts it. It is exactly the mechanism reconstructed in Part One around nineteenth-century tuberculosis, with the moral sign reversed.

Returning to the subject eleven years later, on the subject of AIDS, Sontag reached a still sharper formulation. Metaphors that blame the

ill do not stay harmlessly on the plane of language: they kill. In the precise sense that they can hold people back from seeking care when they need it, out of shame or denial, or push them to seek it when they do not, out of fear. She also noticed that every age seems to need one disease at a time on which to concentrate its dread: first syphilis, then tuberculosis, then cancer, then AIDS. As though a society could not stay fixated on more than one invisible enemy at once.

In both cases she studied, overdiagnosis and the shame that delays diagnosis, the register of blame produces an identical shift of responsibility: from what could be changed collectively to what ought to be corrected individually. Whichever direction the blame is made to flow.

Two recent cases show that the mechanism does not belong to the past. The first is long Covid. For months, in the early phase of the pandemic, patients who went on reporting exhaustion, diffuse pain and cognitive difficulty long after recovering from the acute infection were told, not infrequently, that this was anxiety, somatisation, a psychological problem rather than a biological one. It is the same structure of suspicion that a century earlier attached to the tubercular or the cancerous character, applied this time to a condition with no single diagnostic marker. In the vocabulary set out a few pages ago, it was illness without disease, and therefore without sickness: real to the person, absent from the catalogue, and so denied the exemptions a society grants those it recognises as ill.

Only the pressure of a large enough number of organised patients, together with the accumulation of concrete biological evidence, gradually moved the register from presumed blame to the recognition of a real condition.

The second case concerns obesity and the new drugs of the GLP-1 agonist family, which spread rapidly from the early 2020s. For decades obesity was narrated almost entirely in the register of blame: lack of willpower, bad eating habits, sedentary living. Their own fault, in short. The availability of an effective drug has shifted the public narrative within a few years towards the other extreme, that of a chronic disease to be treated pharmacologically for life.

It is an instructive case. It shows that the boundary between blame and medical condition depends not only on scientific evidence, which has long existed on the multifactorial nature of obesity, but also, and decisively, on the availability of a product able to treat it. A new pill can rewrite at a stroke where a condition sits along the axis of fate,

blame and disease, with a speed no educational campaign had ever achieved.

Part Three: The Air We Do Not See

The first two registers concern the isolated body, the one born with a genetic inheritance or choosing, well or badly, how to live. This third register breaks the isolation: the body does not end at the skin, it is in continuous exchange with the air it breathes, the water it drinks, the microorganisms it lives among, the traffic that surrounds it. It is the register hardest to turn into blame, because nobody chooses the air of their own city. Which may be why it is the easiest to ignore.

Illich and the threshold of counterproductivity

The social critic Ivan Illich left this book its most useful concept, the one that gives it a title. The other word in that title is worth settling at once. *Care* here is not treatment in the narrow sense: it is care as the whole business of looking after health, and it takes in promotion and prevention no less than the treatment of an illness already under way. If anything the book is concerned with what comes before illness rather than with what follows it. English adds something Italian could not: a threshold of care is also, to a clinician's ear, the point at which one decides to intervene. Both senses are meant.

Beyond a certain point of expansion, Illich argued, a great institutional effort turns into its own opposite. Medicine, past that threshold, produces more illness than it cures. He called this iatrogenesis. Not because anyone had a hidden plan, but through a structural dynamic he called *specific counterproductivity*, an unwanted side effect that stays trapped inside the system producing it. Traffic that generates more lost time than it saves, communications that generate more confusion than clarity, education that generates ever more specialised incompetence: for Illich these are one curve applied to different sectors.

The same curve has a philosophical formulation, and it was Roberto Esposito who gave it, taking up the Foucauldian biopolitics already met in Part Two. His concept is the immunitary paradigm. Every community immunises itself against what threatens it; and immunity is protection of life obtained through a partial negation of life, like the vaccine that introduces into the body a small quantity of the harm it defends against. Beyond a certain threshold the protection reverses and turns against the life it was meant to defend: the remedy, Esposito writes, ends up made of the same poison as the disease. It is Illich's counterproductivity in philosophical language, and it is once again the

threshold that gives this book its title.

But Esposito adds a second point, and it touches the underlying question of these pages closely. Historically, immunity has always cut a community in two, because protecting one part has almost always meant exposing the other. Who gets immunised and who is left exposed is never a neutral choice. Only recently, reflecting on the pandemic, has Esposito imagined the opposite possibility: an immunity that does not separate but is shared, in which nobody is protected alone. Common immunity. It is the same intuition this book will meet again shortly in Capua's circular health and in Butler's porous body.

The medical historian Giorgio Cosmacini has shown how far this image of a health institution overshooting its useful threshold runs through the whole history of Italian medicine, not only its recent phase. The precedent is fifteenth-century. With the founding of the great city hospitals in place of the older shelters for pilgrims and paupers, people began to speak of a factory of health to describe the organisation of care on an industrial scale. It is the same expression that would return six centuries later, in the 1990s, to describe the hospital run on assembly-line principles.

The continuity is worth flagging. The temptation to treat health as a product to be mass-produced does not begin with industrialisation: it precedes it by at least four centuries.

From medicine to traffic: the same equation on the road

Illich applied the idea to transport as well as to medicine. Beyond a certain threshold, he argued, the industrial production of speed costs a society more time than it saves it. The cost falls disproportionately on those who cannot afford the speed: people without a car still suffer the traffic of people with one, in the form of streets designed for vehicles rather than pedestrians, worse air, and urban space taken away from other uses.

The equation applies to road accidents, a subject that has always received strangely little attention relative to the toll of dead and injured it represents in Europe every year. That toll falls disproportionately on the young, at an age when almost every other cause of death is rare. To discuss road safety while treating the continuous growth of private transport as fixed is a kind of logical paradox: the symptom can be reduced, by making individual vehicles and individual roads safer, but the cause is untouched, that cause

being the overall volume of a transport system growing faster than its safety can improve. The Uruguayan writer Eduardo Galeano put it in an image: gods are born to serve people and end up with people serving them. This is exactly what happened with the car.

The exposome: measuring what surrounds us

In 1854 a London doctor, John Snow, marked on a map of the city the cholera cases multiplying around Soho, and saw that they clustered around a single public water pump. He had the pump handle removed, and the epidemic receded before anything was known about bacterial transmission. It was the first demonstration of what a spatial fact can do for public health: you did not need to understand the why in order to act on the where. It is the precedent, by almost two centuries, of all the environmental epidemiology that follows.

In recent years environmental epidemiology has developed an instrument that takes this intuition from the conceptual level to the quantitative one, at a much finer grain: the exposome. It is the measurement of the totality of environmental exposures an individual accumulates over a lifetime, from air pollution to chemicals, from chronic stress to diet.

The term is not journalistic metaphor but a precise scientific construct, coined in 2005 by the epidemiologist Christopher Wild. In a paper he asked medical research to equip itself with an instrument complementary to the genome, capable of measuring with equal rigour the other half of the equation that determines health: not only what one is by birth, but everything one has been exposed to from conception onwards.

The toxicologist Gary Miller and his colleague Dean Jones later refined the definition, adding something decisive. The exposome does not measure exposures alone but also the cumulative biological responses the body produces over time: epigenetic modifications, metabolites, the marks each exposure leaves in the organism before any disease declares itself. The refinement is worth holding on to, because it returns us to something the book has already shown. The body does not passively undergo its environment: it processes it, and that processing is as much a part of the measurement as the exposure.

Miller has a telling image for why measuring an exposome is so much harder than sequencing a genome: the difference between chicken soup and what he calls, with a touch of black humour, the biological soup each of us carries in the blood. In the first case you know the

ingredients — onion, celery, chicken — and can work back from the final flavour. In the second, thousands of substances, drugs, preservatives, particulates, heavy metals, pesticide residues, enter the body, mix for years at body temperature, and are transformed by a metabolism that alters them in often unpredictable ways. Sampling the finished product is not enough to reconstruct what went into it, or in what quantities.

It is no surprise, then, that the American institute devoted to environmental health, the National Institute of Environmental Health Sciences, receives a minimal share of the overall budget of the National Institutes of Health. Nor that it sits hundreds of kilometres from the campus where all the others are — the ones devoted to the genome, to cancer, to the heart. The geography is already a judgement. No deliberate design needs to be imagined to notice that the physical distance reproduces, with almost involuntary precision, the symbolic distance this book meets in every part: genetics at the centre, the environment on the periphery, and the funding following the same map.

The epidemiologist Paolo Vineis, who has devoted much of his research to this instrument, has observed how completely the Covid-19 pandemic caught the West by surprise. Not because it was unforeseeable in itself, but because epidemiology had shifted almost entirely onto chronic non-communicable disease over recent decades, as though infectious epidemics belonged to a closed past. It is a useful reminder: cultural blindness to the environment as a system of continuous exchange is not a failure of information. It is a decision about where to look, and it is itself a fact requiring explanation.

The exposome is an attempt to make visible, and therefore politically tractable, what by definition escapes everyday perception. Nobody sees the particulate they breathe, but its concentration in the air of a city explains a considerable share of the difference in health between one district and another.

The virologist Ilaria Capua has proposed reading this continuous exchange through the paradigm of circular health, or One Health: human, animal and environmental health as a single system of communicating vessels. The idea goes back to Hippocrates, but only recently has it found the technical means, from big data to genomics, to be measured with any precision.

The most recent figures give the ancient intuition a disquieting quantitative basis. Monitored populations of wild vertebrates have

fallen by more than two thirds on average since 1970, and species extinction rates now run from a hundred to a thousand times the natural background rate. This is not a marginal detail for human health. The habitat loss that accompanies the collapse of biodiversity forces wildlife into ever closer contact with human settlements and livestock, and it is precisely in that forced contact that spillovers occur: the species jumps of pathogens from animals to humans that have produced, in little more than two decades, Ebola, SARS, avian influenza and the Covid-19 pandemic itself.

Climate change adds a further layer of feedback. Rising temperatures alter regimes of rainfall and drought, push species and pathogens into new ranges, and produce new exposures in turn: from extreme heat to vector-borne diseases now surviving at latitudes once too cold to host them.

Capua recalls an instructive detail: it was Alexander Fleming himself, in the lecture with which he accepted the Nobel Prize for the discovery of penicillin, who warned that misusing antibiotics would sooner or later let bacteria become resistant to them. It was not a prophecy. The first penicillin-resistant staphylococcus had already been observed in 1942, three years before that lecture. The boundary between environment as neutral backdrop and environment as an active partner in the production of health and disease has underpinned the health field model since 1974. Here it dissolves as thoroughly as the boundary between genetic and environmental did in Part One, and then some.

On a finer scale, that of the district rather than the planet, research on environmental disparities applies the logic of the exposome to the relation between environment and social class. The researcher Paul Juarez, at Meharry Medical College in Nashville, has built maps that overlay decades of data on air and water quality, contaminated sites and traffic density with socioeconomic and census data for the same area. They make visible what environmental epidemiology conducted on the general population tends to hide: exposure to harmful environmental factors is not randomly distributed, it concentrates with striking regularity in the poorest districts. Place, once again, is never only geography. It is also the way, usually silent, in which social class writes itself into the air people breathe.

There is a less discussed side to this exchange between body and environment: the environmental impact of manufacturing the very drugs with which we treat the body. The science writer Nicole Ticchi has traced how far pharmaceutical research depends in turn on

specific natural resources, sometimes as fragile as the populations the drugs are meant to treat. And how little this end of the chain is considered when sustainability in health care is discussed.

It is a reminder that closes the circle opened in this part. The environment is not only what makes us ill from outside: it is also what our own response to illness consumes and transforms, often as invisibly as the particulate breathed without noticing.

The philosopher Judith Butler gave this porosity of the body its most radical formulation, thinking aloud during the Covid-19 pandemic. She points out that the word pandemic itself comes from the Greek *pan-demos*, everyone, wherever they happen to be, and describes something able to cross every body without any national or social border really stopping it.

From this she draws what she calls a co-constructionist thesis. The body does not encounter the environment as something external to be defended against: it literally takes it in, breathing it, eating it, absorbing it, to the point where asking where the body ends and the world begins becomes a badly posed question. An uncomfortable conclusion follows. The aim cannot be to isolate the body from its environment, which is impossible and finally undesirable, but to make the environment itself less toxic, because it is already, in any case, inside us.

Butler carries the intuition through to its most direct political consequences, in a passage that anticipates Part Five closely. During the peaks of the pandemic, she observes, the decision to keep schools and factories open always rested on implicit estimates of how many deaths were acceptable. None of them was written down. And they almost never fell evenly across a population: they landed disproportionately on those already disadvantaged by social position, age or race.

No authority put it in those terms, but every decision not to close nonetheless contained, implicitly, a mortality threshold deemed tolerable. It is the question that runs through the whole book, in its crudest form: who decides what degree of risk, and for whom, is to count as acceptable.

Perception and measurement: air, noise, water

In the late 1990s, in order to compare Italian regions with one another, environmental quality was measured through indicators that

were paradoxically subjective: the proportion of people who thought the air was not very polluted, who did not find the noise troublesome, who drank tap water without misgiving.

The stated reason was a practical one: instrument readings did not seem able to represent whole regional territories, too large and too uneven for a monitoring station to say anything about a region. But the choice, made out of necessity, caught something that holds in its own right. Perception, independently of the instrument reading, produces real effects on health and on behaviour: people who feel exposed to an environmental risk change what they do even where the real risk is modest, and people who feel safe carry on unchanged even where the real risk is high.

Vineis notes a figure that helps frame the distance between perception and reality on a global scale. Average world life expectancy has risen from about fifty-one to more than seventy-three years since 1960, smallpox has been eradicated, and measles mortality has fallen by close to an order of magnitude in little over a decade. These are results that depend largely on vaccination campaigns now contested by sections of public opinion that are anything but marginal, despite the evidence supporting them being among the most solid in the whole history of medicine.

It is the same paradox on which the book will close. The distance between how much a factor really weighs and how much it weighs in the perception of the person living with it is itself a fact to be studied, not simply an error to be corrected with more information. And it can run in either direction: towards unwarranted alarm or towards unwarranted trust.

Part Four: The Step That Makes You Ill

Of the five registers in this book, the socioeconomic one is the best documented by epidemiology and the least visible in public debate. On the soundest estimates it weighs as much as ways of living, or more, and it is deeply entangled with them in any case: you can choose to eat better only within the limits of what you can afford, to move more only within the limits of the time your work leaves free.

It is also the register where intervening costs most, because it calls for redistribution rather than health education. And redistribution is never imposed by any natural economic law. The economist Thomas Piketty, on two centuries of fiscal data, has shown that the degree of inequality in a society is not a destiny: it is the outcome of political choices, and of the ideologies that make those choices look inevitable at the time. Class too, then, is a threshold somebody decides where to set.

In 2003 the Regional Office for Europe of the World Health Organization published a short pamphlet aimed at policymakers rather than specialists, *Social Determinants of Health: The Solid Facts*, edited by the same Richard Wilkinson and Michael Marmot who appear later in this part. It reduces the whole field to ten fixed points: from the social gradient to stress, from early life to work, from unemployment to social exclusion, and on to food and transport. Over the years it has become the most translated and most cited reference in European health policy communication.

Two of its ten points are worth taking up here, because nothing in this book has covered them yet. The first concerns the earliest years. Slow growth in the womb and in the first months of life, often a consequence of the mother's own material circumstances, is associated with a raised risk of cardiovascular disease and diabetes in adulthood: an effect measurable six or seven decades after birth. The second concerns unemployment. The damage to health begins before the job is actually lost, at the moment a person starts to see their position as insecure. The anxiety by itself worsens health outcomes, whatever ends up happening.

Marmot and the social gradient

The British epidemiologist Michael Marmot has spent a career documenting what he called the social gradient in health. The main

difference is not made by extreme poverty but by relative position on the social scale, at every step and not only at the extremes.

In his studies of British civil servants, begun in 1967 and known as the Whitehall Study, employees in the lowest grades had a markedly higher mortality rate than those in the highest, up to three times higher in the first study, and this with equal access to the National Health Service. The gradient ran continuously along the whole hierarchy; it was not a sharp break between two categories. The conventional risk factors — smoking, cholesterol, obesity — explained only a minority of the difference. Something else was at work: the degree of control people had over their own work, and their scope for full participation in social life.

Marmot has also told the same story in a more immediate, almost geographical form. Travelling by metro across Washington, from the poor south-east of the city to the prosperous suburbs of Maryland, life expectancy rises by about a year and a half for every mile travelled. The gap accumulated between the two ends of the line reaches twenty years: a physical distance of a few kilometres worth as much as the entire difference between the healthiest and the most afflicted countries on earth.

Marmot has always refused the logic that divides the world into us and them, the poor and everyone else. The gradient concerns the whole social architecture, not a residual category of the excluded. It runs alike through class-divided Britain, the United States that believed itself egalitarian, the Scandinavia that believed itself immune, and the former communist countries of central Europe, where the collapse of social systems in the 1990s produced health inequalities as rapid as they were severe. It is perhaps the most effective argument against the idea that health inequalities are a marginal problem, to be corrected at the edges of the system.

The Covid-19 pandemic offered, despite itself, a mass-scale test of the same gradient. In the first waves, in countries where the data were collected in sufficient detail, mortality in the poorest districts of large cities was systematically higher than in the prosperous districts of the same city, at equal age and equal formal access to care. One virus, arriving at the same moment in the same urban area, killed in different proportions according to the social step of whoever met it.

Marmot himself has carried out reviews on precisely this point. A new disease, for which nobody had yet developed specific risk behaviours, nonetheless faithfully reproduced the gradient documented half a

century earlier in the offices of Whitehall. It is the most up-to-date proof that the register of class concerns the material conditions in which habits form, more than the habits themselves.

Krieger: how the social gets into the biological

The epidemiologist Nancy Krieger has proposed a theory, called ecosocial, that holds together Marmot's statistical finding and the biological mechanism Geronimus had already shown. Social conditions do not remain an external factor added to the clinical picture: they get into the body, they are embodied, to use the technical term, through measurable physiological pathways, from chronic stress to inflammation, from blood pressure to stress hormones.

The boundary between the social and the biological, already cracked by epigenetics in Part One, dissolves completely here. There is no longer a moment at which the social fact ends and the clinical fact begins: there is one continuous process running from a position in a hierarchy to a heartbeat measured in a consulting room.

The international LifePath project, of which Paolo Vineis was among the leading figures, took this intuition to a precision unavailable in Krieger's early years. By measuring the addition of methyl groups to DNA, an epigenetic mechanism regulating which genes are expressed and which silenced, it is possible to calculate a biological age distinct from chronological age.

Socially disadvantaged people turn out to be systematically older, biologically, than their years. And older than people of higher social class at the same chronological age: they age, in other words, faster. This acceleration has in turn been shown to predict long-term mortality, cancer included.

The most interesting finding, for a book that has asked since the Prologue who decides what can be acted on, is that the acceleration is reversible. It can be undone. People who grew up in social disadvantage but whose economic position improved in adulthood show a less penalised biological age than those who stayed where they started. Biological fate, then, is not merely entangled with social class: it can be partly corrected, if the material conditions of a life change in time.

Poverty as cause and effect of illness

Poverty and poor health feed each other in a vicious circle. Poverty produces illness through greater exposure to environmental, occupational and dietary risk: damp or overcrowded housing, districts without green space or shops selling fresh food at affordable prices, work that wears the body out faster and is less well supervised for safety. Illness produces poverty in turn, through loss of income, of work, of bargaining power. It is a spiral that sustains itself above all where no social safety net exists to break it.

Defining poverty by income, by education or by housing conditions changes the outcome very little. On every definition poverty is associated with shorter life expectancy, higher infant mortality, and a higher prevalence of almost every chronic condition. Comparisons between Italian regions over the years tell the same story on a national scale, with a north-south gradient closely tracking the one between social classes inside a single city.

Public health has known this for a long time, which is exactly why it is instructive to see how slowly it translates into coherent policy. And so we come back, by another route, to the lifestyle drift met in Part Two, applied here not to a single behaviour but to the whole material condition of a life.

Wilkinson and Pickett: why inequality harms everyone, not only the poor

The epidemiologists Richard Wilkinson and Kate Pickett shifted attention from a comparison between individuals, which was Marmot's, to a comparison between whole societies. Beyond a certain threshold of economic development, the health of a population depends not on the average wealth of the country but on the degree of inequality within it.

Rich but highly unequal countries show worse health outcomes than less rich but more equal ones. And not only in physical health: crime, teenage pregnancy, dropping out of school and mental disorder follow the same curve, sharper where the distance between incomes is wider. The right question, on this line of research, is not how prosperous a country is but how steep the social ladder running through it. The steeper it is, the worse the average health, at every level of absolute income, the highest levels included.

So this is not only an argument on behalf of the poorest. It is an argument for less inequality as such, from which, on these data, even the richest people in the most unequal societies would benefit. It is an

uncomfortable conclusion because it does not lend itself to a charitable reading, the one in which helping those at the bottom would be enough and the overall architecture could be left alone. If the distance itself does the damage, reducing it means acting on the whole distribution of wealth, not only on its poorest tail.

The thesis is far from settled, though, and that deserves saying. The economist Angus Deaton, a Nobel laureate and a student of poverty no less than Wilkinson and Pickett, is one of its most authoritative critics precisely because he shares their concerns. Deaton does not deny that the poorest are less healthy, which is about as solid as facts get. What he disputes is that inequality as such, at the level of whole societies, is the cause.

The international correlations between income inequality and life expectancy, he argues, have not survived better data. The famous correlation between inequality and mortality across American cities and states is largely explained by their different racial composition rather than by inequality itself. And changes in inequality over time do not appear to produce changes in mortality. He also observes, as an economic historian, that even the social gradient is no eternal law: in England, for at least two centuries, the aristocracy had no advantage in life expectancy over the common people. In place of the inequality of a society he points instead to an individual mechanism, the relative deprivation of a person measured against their own reference group.

It is a divergence this book prefers to display rather than resolve. All the more so because the two sides share a starting point — health is distributed unjustly — and disagree about a link in the causal chain rather than about the political conclusion. And it is precisely here that the register of class stops being a sectoral problem of public health and becomes a question of general economic policy: the natural bridge into Part Five.

Part Five: Health for Sale

The first four parts have shown how a single body is read through four registers: fate, blame, place, class. This fifth register changes level. It shows that the choice of which of the first four to privilege, at the level of whole national and international health policies, is never neutral either. It is the same lifestyle drift met in Part Two, applied to the global architecture of health rather than to a single programme.

The public health physician Walter Ricciardi has shown how young that architecture is. The first social insurance system appears in Bismarck's Germany in 1883; the first genuinely universal health service in the United Kingdom only after the Second World War; and the United States remained, among rich countries, a partial exception until the reform of 2010. It is a young architecture, and for that reason anything but settled: it goes on being redefined, displaced, renegotiated, as the three cases that follow show.

From Alma-Ata to neoliberalism: Navarro on the entropy of the WHO

In 1978 the World Health Organization adopted at Alma-Ata a declaration asserting a principle now almost forgotten: a public health approach oriented to a whole population does more for health than the technological advance of medicine. In the analysis of the epidemiologist Vicente Navarro, that moment remains the high point the WHO ever reached in its original mission.

Since then, Navarro argues, the organisation has drifted steadily towards a different logic: reduced public spending, deregulation, the conversion of patients into customers and of health into a commodity. The path closely mirrors the balance of power with the International Monetary Fund, the World Bank and the World Trade Organization. There is nothing secret about the turn. It is a public process, debated in the very institutions that produced it. But it remains, at the highest level, the same drift observed elsewhere in this book in a single national policy.

Navarro insists on a point of method worth setting out in full, because it marks the difference between his criticism and a purely technical reading of the phenomenon. Neoliberalism, he writes, is not to be understood as an impersonal and inevitable economic process, but as the ideology of a specific bloc of interests: the dominant classes of rich

and developing countries alike, who have built on that ideology an alliance now governing much of the world economic order. The clarification moves the question. No longer what globalisation imposes, but who decides what globalisation must impose: exactly the question running through this book, applied at the largest available scale.

To guard against too neat a synthesis, it should be said that even within the body of thought gathered around Navarro there is no agreement that the international institutions have done enough. In the same volume where Navarro collects his own essays, the Indian epidemiologist Debabar Banerji attacks the WHO Commission on Social Determinants of Health, the one chaired by Michael Marmot between 2005 and 2008: the meeting of the two authors most cited in this book. And he does not spare it. He judges it too technical and insufficiently attentive to the relations of power and class Navarro puts at the centre. In fairness to the Commission, its final report is not a timid document: it opens by stating that social injustice is killing people on a grand scale.

Marmot documents the gradient; Navarro asks who produces it and why it suits someone to maintain it. The two questions are complementary, but the weight the two authors give them is not the same: another of the tensions this book prefers to display rather than resolve.

The year 2025 offered a fairly direct confirmation of the institutional fragility Navarro had been describing for years. The United States announced its withdrawal from the organisation, ending funding that had supported a substantial share of its budget for decades. The episode exposed how far global public health depends, in the end, on the domestic politics of individual contributing countries, decided for reasons that have little to do with epidemiology.

No hypothesis of conspiracy is needed to read this. It is the logic of financial incentives at the highest available scale, the same logic that elsewhere explained why local prevention programmes end up drifting towards the individual rather than towards the conditions that individual lives in.

Naomi Oreskes and Erik Conway have shown, using documents that surfaced in litigation against the tobacco industry, how scientific doubt about the link between smoking and cancer was manufactured for money. Bought, literally. Not by an anonymous entity but by scientists identifiable by name, funded with tens of millions of dollars

between the late 1970s and the mid-1980s to produce studies and testimony usable in court. The same scheme, with some of the same protagonists, would be reused against the consensus on acid rain and the ozone hole, then on passive smoking, then on global warming, and finally, posthumously, against Rachel Carson and DDT.

It is an instructive case because it shows precisely the difference between following incentives and positing a conspiracy. There was nothing secret about that funding: it was declared, verifiable, and is now fully documented. It is simply that for years nobody had looked at it with the attention it deserved.

The biologist Enrico Bucci has documented a second mechanism, distinct from Oreskes's because it arises not from pressure outside the scientific community but from inside it. Academic careers are measured almost everywhere on the number and visibility of publications, and that criterion, reasonable in itself, creates a structural incentive to publish striking results rather than true ones.

The most spectacular case he recounts is that of the Dutch social psychologist Diederik Stapel. For fifteen years Stapel built a brilliant career by fabricating data that had never been collected, including a widely cited study linking urban disorder to an increase in racist behaviour: the experiment described had never been carried out.

The estimates Bucci gathers on the prevalence of poor practice are anything but marginal. A survey published in *Nature*, covering some eight thousand researchers, found that around a third admitted to questionable practices. A survey at the University of California, San Diego found that about fifteen per cent of respondents, eighty-one out of five hundred and forty-nine, said they would be willing to alter a result in order to win funding or secure a publication.

Here too, as with Oreskes, no conspiracy is required. Fraud grows out of a perfectly comprehensible career incentive, applied to a system that, with exceptions, rewards the quantity and visibility of publications more than their reliability over time. For balance it should be added that it was the scientific community itself, through independent replication and peer scrutiny, that uncovered and made public every case Bucci recounts: fraud is a failure of particular individuals, not of the method that exposed them.

Berlinguer: health as a right, health as a commodity

The bioethicist Giovanni Berlinguer described the same tension from

another angle: the shift, in the health systems of many countries, from a model founded on universal primary care to one in which public planning of priorities gives way to the spread of expensive technologies reserved for a small number of beneficiaries. It is the question that runs through this whole book, posed on a global scale. Is health a right distributed according to need, or a commodity distributed according to the ability to pay for it?

Giuseppe Remuzzi, director of the Mario Negri Institute for Pharmacological Research, arrives at a similar conclusion, though he writes from a position of pragmatic defence of the Italian public health service rather than ideological denunciation. He observes how little of Italian health care is genuinely private even where it presents itself as such: much of the spending, including in formally private facilities, remains publicly funded. It is a detail that complicates the story of a free health market independent of the state.

The tension between right and commodity has a deeper genealogy than the history of health care alone reveals. The economist and anthropologist Karl Polanyi, in a book of 1944, *The Great Transformation*, described it as the constitutive feature of the modern market economy. For that economy to work, he argued, it has to treat as commodities to be bought and sold things that are not commodities at all, because they were not produced in order to be sold. He named three. He called them fictitious commodities: labour, which is only another name for a human activity inseparable from life itself; land, which is only another name for nature; and money.

Health belongs to the same family. A price can be attached to it, but it remains something that did not begin as a commodity, and every attempt to treat it entirely as one meets resistance sooner or later. Polanyi called this the double movement: the expansion of the market always provokes, historically, a countermovement limiting its action precisely where it touches human beings, nature and their protection.

And, in a detail that returns this book to its own governing rule, he was careful to say that the countermovement never arises from a conspiracy. No one directing it. He dismissed the idea of an anti-liberal plot as pure invention, showing that the social reaction to market expansion is each time spontaneous, practical and unorchestrated, owed only to the breadth of the vital interests that expansion had begun to touch. The Alma-Ata declaration is one of the forms that countermovement has taken; its subsequent erosion, one of the forms taken by the push the other way.

The collapse of a model: an Italian investigation

As early as 1999 the health economist Uwe Reinhardt was arguing that all health systems would eventually converge on the same three-tier architecture: high-quality care paid for directly by the very rich, insurance-managed care for an expanding middle class, and rough and ready care for the poor. Richard Smith, reporting that prediction in the *British Medical Journal*, added the observation that makes it disquieting. A public health service does not end with a bang but with a whimper: it is not dismantled by decree, it empties out when the middle classes stop trusting it and make other arrangements, taking the resources and, above all, the political attention with them. What is left is a rump service for those with no alternative.

Italy offers, in recent years, a close case study of how the drift described so far translates into concrete practice. The investigation conducted by the journalist Milena Gabanelli, with Simona Ravizza, has documented with data and testimony how the national health service, once a model studied internationally, has progressively crumbled.

Emergency departments staffed in significant part by doctors hired by the shift, taken on by outside agencies for single stints of up to twelve consecutive hours, paid more than their salaried colleagues precisely because they lack the protections and often the minimum requirements demanded of an in-house doctor. Surgeons reaching the operating theatre without having accumulated the minimum number of procedures needed for full technical command. An insurance market that in some cases generates incentives for operations that are not strictly necessary but are performed anyway to secure reimbursement.

The most disturbing detail concerns programmes already under development to identify, through data analysis, the people with the most pronounced hypochondriac tendencies, and to offer them recurring paid packages of tests and consultations. It is the epidemic of diagnosis described earlier in this book, now automated and monetised on an individual basis rather than left to general clinical practice.

In the same article, Smith does not stop at the diagnosis. Faced with a gap between what a health service promises and what it can deliver, he observes, you can work on two sides: improve what is delivered, which is the part politicians always promise, or work on the expectations, which is the part nobody promises. Because expectations

do not arise on their own: they are stoked by the media, by direct access to medical sources, and by politicians themselves. It is the demand that information creates, met in Part Two, observed no longer in a consulting room but at the scale of a national system.

The list of what ought to be said, and almost never is, is short and unwelcome. Death is inevitable. Most major diseases cannot be cured. Antibiotics are no use against flu. Artificial hips wear out. Hospitals are dangerous places. All drugs have side effects. Most medical treatments achieve only marginal benefit and many do not work at all. Screening tests produce false negatives. And there are better ways to spend money than on more health technology.

From this Smith draws a definition. The best health care system in the world, the one politicians in every country promise, will not be the one that provides everything for everybody: it will be the one that determines what a society wants to spend on health and then provides explicitly limited, evidence-based services in a humane and open way, without asking the impossible of the people who work in it.

The position is worth holding alongside the others in this part without dissolving the tension. For Navarro, and shortly for De Vogli, the problem is who is taking resources away from public health care; for Smith it is that public health care is being asked for what no system can give, and that promising to give it anyway is already a way of preparing its failure. The two readings do not fully reconcile, and yet they share a target: whoever promises without reckoning what the promise costs.

De Vogli: the crises of capitalism and the body

The epidemiologist Roberto De Vogli ties the converging crises of the contemporary world — environmental, psychological, social — explicitly to a single common cause, which he calls neoliberalism understood as market greed. The phrase is his. On one side the idea that people are essentially profiteers in permanent pursuit of status and wealth; on the other the idea that every human affair is best regulated as a market exchange. These are not parallel phenomena, on this reading: rising mental disorder, obesity, diabetes and growing inequality share a root in the deregulation of the sectors, food first among them, that shape most of the daily behaviour bearing on health.

De Vogli has also measured the link in very concrete terms, and close to home. In work co-authored with Michael Marmot, already met in

Part Four, and the epidemiologist David Stuckler, he estimated a rise in suicides and attempted suicides in Italy directly attributable to the Great Recession of 2008. The finding is worth underlining, because on a single Italian case it brings together the two names this book cites most for the registers of class and of the commodity.

Marmot's social gradient and De Vogli's critique of neoliberalism are not, on balance, alternative readings. They are two instruments that reinforce each other when the task is to explain how a financial crisis turns into a measurable rise in mortality.

Vicente Navarro and Carles Muntaner, editing a collection of studies on the same crisis, added an observation that completes the picture. Firms and financial sectors did not emerge from 2008 weakened but strengthened, thanks to generous public bailouts, weakened unions and closer ties with market-friendly parties. The crisis, in other words, moved power upwards rather than distributing it: an outcome no purely technical reading of the economic cycle can explain on its own.

The physician and activist Vittorio Agnoletto has proposed a formula that captures the whole arc traced in this chapter, from the Alma-Ata declaration to the present: the passage from citizens to consumers, in which rights turn progressively into somebody else's profits. It is a polemical formula, to be handled with the caution any militant text deserves. But the facts it points to — pharmaceutical patents, the price of new treatments, the growing privatisation of entire segments of care — are themselves verifiable rather than partisan assertions.

From patient to customer, from customer to data: the dawn of algorithmic medicine

The last stage of this drift is already under way: the digital transformation of health care, from the electronic patient record to telemedicine, from wearable devices to predictive systems built on data. The entrepreneur and digital consultant Roberto Ascione describes the process in almost revolutionary terms, and in any case it is already changing, within a few years, how each person's health information is gathered and used.

The engineer Enrico Guardelli has surveyed how far the transformation is already concrete rather than merely announced. Deep learning algorithms reach accuracy comparable to that of experienced specialists in identifying pulmonary nodules in tomographic images, melanomas in photographs of skin lesions, and signs of diabetic retinopathy in retinal scans, reducing in some studies

both false positives and false negatives relative to human reading alone. These are real results, not promotional ones, and they make the promise of algorithmic medicine anything but theoretical.

The promise, every time, is to put the citizen back at the centre: to make them an active and informed party to their own care, able to monitor their own measurements in real time and share them with whoever is treating them. In the years when the electronic patient record was first being discussed as a project, the declared aim was exactly this, to close the information gap between citizen and health system by putting the person, rather than the individual institution, at the centre of the collection of their own clinical data.

The science journalist Cristina Da Rold has pointed out, though, that the same infrastructure can just as easily flip into a system of continuous surveillance of one's own body. The boundary between care of the self and control of the self, between a useful clinical measurement and an exploitable commercial one, becomes steadily harder to draw.

The risk, not yet realised but visible in its premises, is that the last stage of the road from patient to customer is a further stage still. From customer to data. What is distributed and sold would no longer be only the medical service, but the prediction of individual risk itself, calculated by algorithms that combine, without distinguishing between them any longer, the five registers of this book — genetic, behavioural, environmental, social, institutional — into a single score. It will be that score, more than any doctor, that decides in future who and what is worth acting on.

After globalisation: an open question

This whole part has described a world health order built around a single hegemonic centre, the one Navarro calls neoliberalism, whose most explicit formulation was the Washington consensus. That order has been showing signs of wear in recent years. In its place an avowedly multipolar world is emerging, for which China has long proposed a philosophical frame of its own, *Tianxia*, all under heaven: a principle of world order that is relational and non-excluding, which the philosopher Zhao Tingyang has reworked as an explicit alternative to the system of sovereign states in mutual competition on which the postwar Western order rests.

It is worth asking, without pretending to a settled answer here, what such a shift would mean for the health of populations. On one side, a

principle that refuses exclusion by definition has an underlying affinity with two images already met in this book: the etymology of pandemic invoked by Butler in Part Three, *pan-demos*, everyone, wherever they are, and Capua's circular health, in which no border truly separates the health of one body from another's. In theory, a world order built on such a principle would favour a less fragmented health governance. In theory.

On the other side, what can be observed of the emerging multipolarity so far looks more like competition between spheres of influence than universal harmony. The vaccine diplomacy of the pandemic, bilateral health agreements tracking geopolitical alignments, access to the most advanced medical technologies increasingly conditioned on who stands with whom. A world with more centres of health power is not automatically a world with less power in health: it risks multiplying instead the places where the question running through this book, who decides what can be acted on, has to be asked again from the beginning. Different interlocutors, the same urgency.

Epilogue: Beyond the Threshold

In 2000 a survey in the Swiss canton of Ticino asked a sample of citizens how much each factor weighed on their own health. Respondents put the health service, the most visible and most photographable part of the whole architecture, well ahead of everything else.

The epidemiological data of the same period told another story, the one this book has tried to reconstruct chapter by chapter. The health field model dates from 1974. Marc Lalonde treated the organisation of care, the environment, human biology and ways of living as distinct determinants. The most rigorously documented estimate of their relative weight attributes something like half of avoidable mortality to behavioural factors alone, against a markedly smaller share for medical care in the strict sense. Between how much a factor really weighs and how much it weighs in the perception of the person living with it runs a distance no communication campaign has ever really closed.

Hans Rosling, who made the gap between data and perception his life's work, observed that the human mind looks systematically for a single culprit instead of recognising a system of interacting causes. From this he drew a simple rule: look for causes, not villains; look for systems, not heroes.

He applied the rule to credit as well as to blame. He described how the Ebola epidemic in Liberia in 2014 was not stopped by a heroic leader or a single organisation. It was stopped, inconspicuously, by civil servants and local health workers who changed, within days, funeral practices generations old, risking infection daily in work as essential as it was invisible. The same mind, he noted elsewhere, needs an enemy on whom to concentrate the blame for a disease: before modern medicine, syphilis was the French disease to the Italians, the Neapolitan disease to the French, the German disease to the Poles, and never anybody's own.

Susan Sontag reached the same observation from an entirely different direction, literary criticism rather than the epidemiology of global data. Every age, she wrote, seems to need one disease on which to concentrate stigma and responsibility: first syphilis, then tuberculosis, then cancer, then AIDS. Never more than one at a time. Even the word victim, which looks like the most compassionate gesture available,

reactivates for Sontag the same mechanism: if somebody is innocent, there must be, somewhere, somebody guilty.

It is the same rhetorical construction Jules Romains had already exposed in his small-town Doctor Knock, who in 1923 invented a scientific authority that did not exist in order to make his own idea credible. And one this book ran into for real while it was being written, when a figure repeated for years on a set of health education slides turned out, on checking, to have no traceable primary source: nobody's deception, simply a number never followed all the way back, which the convenience of repetition had made true.

The same dynamic ran through the Covid-19 pandemic in real time and on a planetary scale. The search for a culprit — a laboratory, a government, a single category of unvaccinated people — accompanied the management of the emergency throughout, often distracting attention from the real complexity of the chain of causes: from the capacity of national health systems to absorb the shock, to global inequalities in access to vaccines.

The misinformation that accompanied the vaccination campaigns ran in both directions, the one denying that vaccines worked and the one dismissing every legitimate doubt about the timing and manner of their introduction. It shows how hard Rosling's rule remains to apply exactly when it is most needed. Looking for causes and not villains is easier to state as a principle than to practise when fear is high and scientific uncertainty, unavoidable in any new emergency, is mistaken for evasion or for error.

In the United States, in the middle of the 2020s, this dynamic found one of its sharpest expressions, this time not in public opinion but in the institutions charged with protecting it. Robert F. Kennedy Jr., as Secretary of Health and Human Services, dissolved the federal vaccine advisory committee and reconstituted it with figures known for positions critical of vaccination. The department then revised downwards recommendations that had been in force for decades, outside the normal procedures of independent assessment, and in some cases a federal judge later suspended them. Health agencies delayed or blocked publication of their own studies confirming vaccine safety. And the administration announced publicly, all the same, an association between a common antipyretic drug and autism that the largest epidemiological study available does not support: a sibling-comparison design, which isolates shared family factors. In the months that followed, measles and whooping cough in the United States returned to levels not seen for decades.

The chair of the reconstituted committee summarised his approach in a sentence that deserves to be attributed in full to the person who said it, the physician Kirk Milhoan, because its value lies precisely in being an individual statement rather than an anonymous process: «I don't like established science. Science is what I observe.» It is the same structure of thought as Knock's, deciding what is real on the basis of what it suits him to see, applied this time not to one imaginary canton but to the immunisation schedule of an entire country.

Some states responded by forming regional alliances to issue health recommendations independent of the federal ones. It is a fragmentation of health governance that reproduces, on a national instead of an international scale, the question raised about multipolarity in Part Five: who decides, when the centre that used to decide stops deciding on the evidence.

It is worth recalling here that distrust of vaccines is not an invention of recent times. Remuzzi has traced how nearly every pioneer of vaccination, from Edward Jenner onwards, faced hostility, ridicule or exile in their own lifetime, and was rehabilitated only later, often posthumously.

And yet it was those vaccines that marked some of the sharpest advances in the history of the species: from smallpox to rabies, from tetanus to the polio vaccine funded by a public subscription of small coins promoted by President Roosevelt, himself in a wheelchair because of the disease. Initial distrust of every new vaccine looks almost like an anthropological constant rather than a discovery of this century. What changes, case by case, is how quickly and with what means it is overcome.

The physicist Alessandro Vespignani, who leads one of the world's principal groups in the predictive modelling of epidemics, has given a name to a pattern the pandemic made visible on a mass scale: the cycle of panic and neglect. A risk is first denied or minimised; then, when the numbers get out of hand, the response is drastic measures taken in panic; and as soon as the acute emergency subsides there is a rapid return to denial, with the lessons just learned quickly forgotten, until the next cycle.

Vespignani also points to a paradox that bears closely on this book's whole register of prediction. When an accurate forecasting model prompts timely action, and the action works, the public does not see the predicted catastrophe arrive, and concludes, wrongly, that the model was wrong from the start. Forecasts that work risk being

mistaken for unjustified alarmism precisely because they succeeded. It is a mechanism that helps explain why trust in predictive science stays so fragile, however accurate that science has been.

Three voices, three independent routes — literary criticism, the epidemiology of global data, the documentary history of science — arrive at the same conclusion: the need to attribute blame or fate to illness precedes any specific economic interest, and outlasts it. It is a cultural need as old as medicine itself. The institutions, markets and political ideologies this book has crossed did not invent it: they found it already there and put it to use, each in their own way, to decide which causes of illness to confront and which to leave, in practice, invisible.

This book closes with the question it opened on, reversed. The Prologue asked who decides, faced with two decalogues identical in form and opposite in content, which one to apply and to whom. The Epilogue can only add that the decision, wherever its threshold happens to fall in a given period, is never only about science. It is always about science together with the power to decide where the threshold of care runs: which causes of our falling ill to confront, and which to leave to fate.

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